



TRINITY

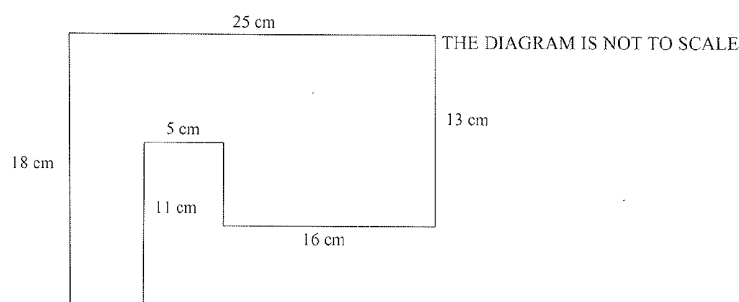
Entrance Examination practice questions 13+ Mathematics

When completing your exam, you should:

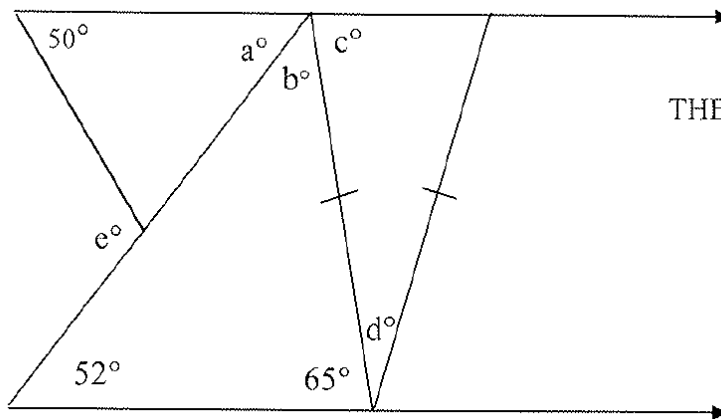
- Try all the questions.
- In the exam there will be space for working below each question. Show your working in the space provided.
- Do not rub out any working unless you wish to change it.
- Correct answers may not be awarded full marks if unsupported by relevant working.
- Write your answers on the answer line provided.
- Do not write in any margins.

Calculators ARE allowed.

1. There are 1000 cm^3 in a litre. Calculate the volume in litres of a fish tank measuring 30cm by 50cm by 85cm.
2. The formula to find the circumference, C , of a circle is given by $C = \pi \times d$, where d is the diameter of the circle.
Find the radius of a circle of circumference 100 cm. Give your answer rounded to 1 decimal place.
3. A square has area 50 cm^2 . Find the perimeter of the square, giving your answer rounded to 3 significant figures.
4. Considering only the numbers from 20 to 30 inclusive, write down the number in which the sum of the squares of its digits is 40.
5. Simplify the following:
 - a) $5x - 3x + 4x$
 - b) $8ab + bc + ba + 6b - 2cb - 3ab - b$
 - c) $5(3x - 8) - 7(3 - 2x)$
 - d) $(3x^2y^3)^2$
6. Given that $P = 3q - r$, find:
 - a) P when $q = 7$ and $r = -5$
 - b) q when $P = 240$ and $r = -2q$
7. A multi-pack of crisps contains ten bags of crisps.
Two are beef flavour, three are cheese flavour and five are plain. Jack takes three bags at random.
 - a) What is the probability that the first bag taken is not cheese flavour?
 - b) In fact, the first two bags are both beef flavour, what is the probability that the third bag is not cheese?
8. Calculate the area of the figure below; assume all angles are right angles.



9. Calculate the missing angles in the diagram below. The two lines with the arrows are parallel.

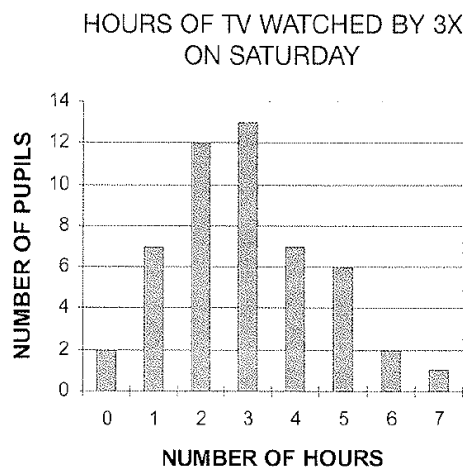


THE DIAGRAM IS NOT TO SCALE

10. Solve the following equations to find the value of y in each case:

- a) $7 - 3y = 34$
- b) $3y - 7 = 37 + y$
- c) $\frac{1}{2}(5y + 3) = 4 - 2y$

11. The bar chart below shows the result of a survey amongst the 50 pupils in class '3X' on how much television they watched the previous Saturday.



- a) Find the percentage of the total time spent watching television that was watched by all those who saw exactly 3 hours of television.

In fact one of the pupils who said they watched three hours of TV actually watched five hours of TV.

- b) Work out who watched more TV in total; all those who watched 3 hours or all those who watched 5 hours? (You must show calculations to support your answer.)

12.

8km is approximately equal to 5 miles. Use this approximation to find:

- a) How many miles are equivalent to 100km
- b) The length in km of a 26 mile marathon
- c) Given also that there are 3 feet in a yard and 1760 yards in a mile, use the approximation to find how many cm there are in one foot, to 1 decimal place.

13. a) The point (3, 2) lies on the line $4x - y = 10$ because $4 \times 3 - 2 = 12 - 2 = 10$
The point (1, q) also lies on this line. Find the missing y -coordinate, q .

b) A is the point (2, 5) and B is the point (-1, 2).

The points A and B lie on the line $ax + 3y = c$. Find the value of the numbers a and c .

14. A bottle contains 330ml of mineral water. Jake drinks 50% more than Adam, and these two friends finish the bottle between them. What volume does Jake drink?

15. If a number divided by 5, plus two more than the number divided by 4 totals 5.

- a) Write an algebraic equation to represent this information.
- b) Solve your equation to determine the number.

16. If a coat priced at £95 goes up in cost by 10%, then reduces by 20%, by what percentage has the coat's price changed overall ?

17. A palindromic number is a number that reads the same when the order of its digits is reversed. What is the difference between the largest and smallest five-digit palindromic numbers that are both multiples of 45 ?

18. What is the smallest cube number that can be written as the sum of three positive cubes?

19. A fish weighs the total of 2kg plus a third of its own weight. What is the weight of the fish in kg?

20. In a sequence, each term after the first two terms is the mean of all the terms which come before that term. The first term is 8 and the tenth term is 26. What is the second term?

Answers:

- 1. 127.5 l
- 2. 15.9 cm

3. 28.3 cm
4. 26
5. a) $6x$ b) $6ab - bc + 5b$ c) $29x - 61$ d) $9x^4y^6$
6. a) 26 b) 48
7. a) $\frac{7}{10}$ b) $\frac{5}{8}$
8. 219 cm^2
9. $a=52, b=63, c=65, d=50, e=102$
10. a) $y = -9$ b) $y = 22$ c) $y = \frac{5}{9}$
11. a) 26.5% b) Those who watched 3 hours
12. a) 62.5 miles b) 41.6 km c) 30.3
13. a) -6 b) $a = -3, c = 9$
14. 198 ml
15. a) $\frac{x}{5} + \frac{x+2}{4} = 5$ b) 10
16. 12% decrease
17. 9090
18. 216
19. 3 kg
20. 44

2.